Space Weather Highlights **SWPC PRF 1956**
18 February - 24 February 2013 **25 February 2013**

Solar activity was low. 15 C-class flares were observed throughout the week, 13 of which originated from Region 1678 (N11, L=069, class/area=Dkc/470 on 21 Feb). This region was numbered on 18 Feb and quickly evolved from a beta to a complex beta-gamma-delta type magnetic configuration. By 20 Feb, it had grown to 12 times its original size and produced the largest flare of the week, a C8/Sf at 24/1111 UTC. Region 1678 rotated off the visible disk on 23 February as a Dko type region with beta-gamma magnetic characteristics. Over a dozen coronal mass ejections were observed during the week. Many of the CMEs were associated with disappearing solar filaments. An 8-degree filament erupted near N25W18 between 0147 and 0548 UTC on the 19th. Analysis of the associated CME suggested it had an Earth-directed component. The largest filament eruption of the week occurred later that day when a 41 degree long filament centered near S22W10 left the disk between 1006 and 2310 UTC. Analysis suggested there was no earth-directed component with that CME.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit remained at normal levels throughout the week.

Geomagnetic field activity was at quiet levels until mid-day on 22 Feb when major storm levels were observed at high latitudes and the planetary K-index reached unsettled levels. The increased activity was tied to the arrival of a geoeffective coronal hole high speed stream, possibly coupled with a transient solar wind feature. The unsettled conditions lasted through the first period of 23 February after which quiet activity levels prevailed.

Space Weather Outlook
25 February - 23 March 2013

Solar activity is expected to be at very low to low levels throughout the forecast period with a slight chance for an M-class event after 10 March when Region 1675 returns.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels.

Geomagnetic field activity is expected to be at quiet levels through the majority of the forecast period. Unsettled levels are predicted for 01 and 21 March when recurrent coronal hole high speed streams are forecast to be geoeffective.

Daily Solar Data

Date	Radio Flux 10.7cm	Sun spot No.	Sunspot Area (10^{-6} hemi.)	X-ray Background Flux	Flares							
					X-ray			Optical				
					C	M	X	S	1	2	3	4
18 February	105	92	400	B1.5	1	0	0	3	0	0	0	0
19 February	112	117	460	B3.6	1	0	0	1	0	0	0	0
20 February	114	106	650	B3.2	3	0	0	3	0	0	0	0
21 February	109	75	660	B2.7	3	0	0	2	0	0	0	0
22 February	107	79	530	B2.3	1	0	0	0	0	0	0	0
23 February	100	56	440	B3.8	2	0	0	1	0	0	0	0
24 February	95	25	60	B2.9	1	0	0	0	0	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm ^{2} -day -sr)			Electron Fluence (electrons/cm^2 -day -sr)		
	>1 MeV	>10 MeV	>100 MeV	>0.6 MeV	>2MeV	>4 MeV
18 February	5.1e+04	1.2e+04	3.0e+03		6.3e+05	
19 February	7.7e+04	1.2e+04	2.8e+03		6.7e+05	
20 February	7.2e+04	1.1e+04	2.8e+03		6.9e+05	
21 February	7.3e+04	1.1e+04	3.0e+03		7.4e+05	
22 February	1.8e+05	1.2e+04	2.8e+03		1.4e+06	
23 February	6.2e+04	1.1e+04	2.8e+03		2.0e+06	
24 February	6.8e+04	1.2e+04	2.9e+03		4.7e+06	

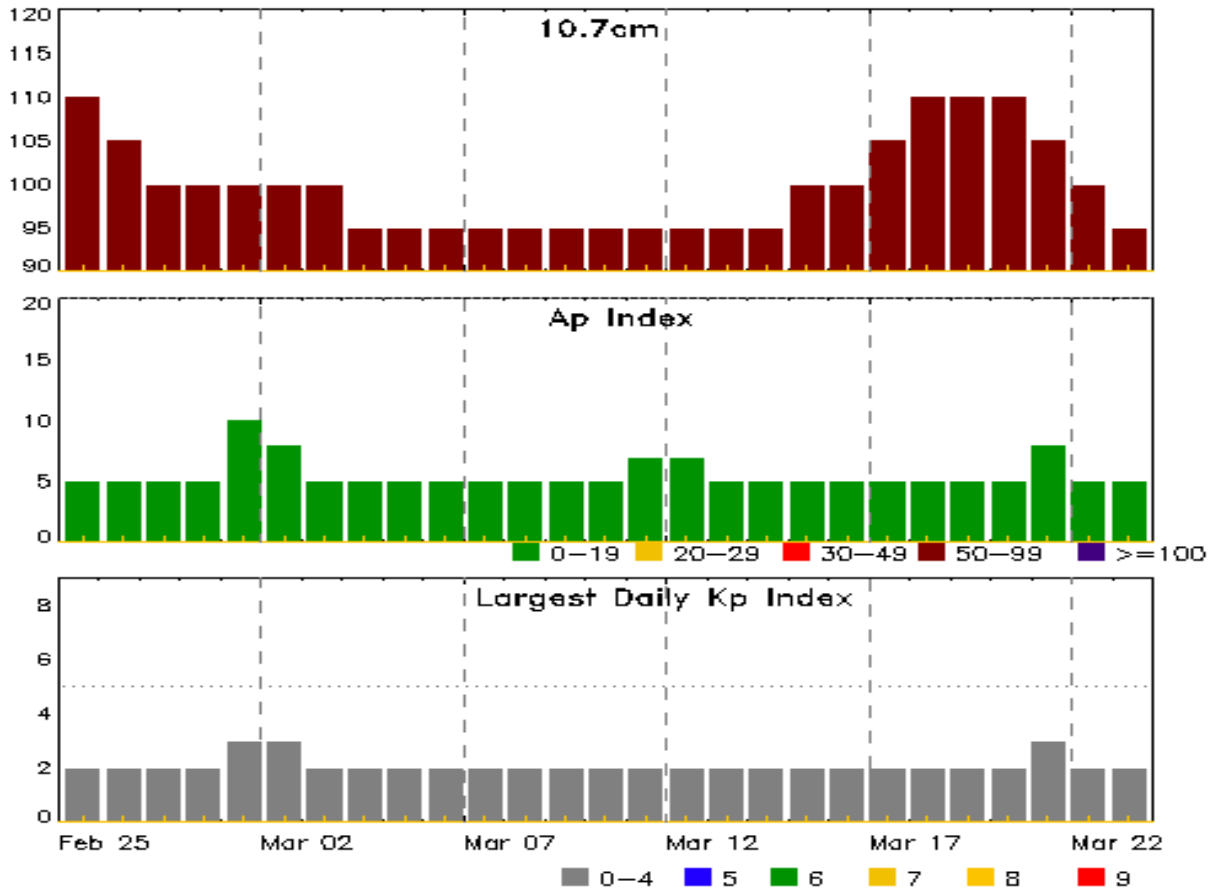
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
18 February	4	1-0-0-1-1-1-1-3	2	0-0-0-2-1-1-1-1	4	1-0-0-1-0-1-1-3
19 February	5	1-2-2-1-2-2-1-0	10	0-0-2-3-4-4-2-0	6	1-2-1-1-2-2-2-1
20 February	6	1-1-1-3-2-2-1-1	13	1-1-1-5-4-2-2-1	5	1-1-1-2-2-2-2-1
21 February	5	2-2-2-1-2-1-1-1	5	2-2-1-0-1-2-1-2	6	2-2-2-1-1-1-2-2
22 February	9	3-2-2-2-3-2-2-2	20	1-2-3-4-6-3-1-2	9	2-2-2-2-3-2-2-3
23 February	6	3-1-0-1-2-2-2-2	14	1-2-1-5-5-0-1-0	6	3-1-0-1-2-1-2-2
24 February	2	0-1-1-1-1-1-1-0	6	0-1-3-4-1-1-0-0	3	1-1-1-1-1-1-1-1

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
	No Alerts or Warnings Issued	

Twenty-seven Day Outlook



Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index
25 Feb	110	5	2	11 Mar	95	7	2
26	105	5	2	12	95	7	2
27	100	5	2	13	95	5	2
28	100	5	2	14	95	5	2
01 Mar	100	10	3	15	100	5	2
02	100	8	3	16	100	5	2
03	100	5	2	17	105	5	2
04	95	5	2	18	110	5	2
05	95	5	2	19	110	5	2
06	95	5	2	20	110	5	2
07	95	5	2	21	105	8	3
08	95	5	2	22	100	5	2
09	95	5	2	23	95	5	2
10	95	5	2				

Energetic Events

	Time			X-ray		Optical Information			Peak Radio Flux		Sweep Freq Intensity	
Date	Begin	Max	Half Max	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	245	2695	II	IV

No Events Observed

Flare List

	Time				Optical		
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
18 Feb	0236	0241	0244	C1.0	SF	N12E15	1675
18 Feb	0423	0427	0429	B4.0	SF	S08E44	1673
18 Feb	2059	2059	2105		SF	S11E35	1673
19 Feb	0741	0745	0747	B8.7	SF	N11W30	1678
19 Feb	1009	1051	1126	C2.1			1678
19 Feb	2003	2007	2009	B8.8			1678
20 Feb	0532	0536	0540	B6.1			1678
20 Feb	1041	1044	1046	B5.4			
20 Feb	1108	1111	1113	C8.2	SF	N12W44	1678
20 Feb	1331	1335	1337	B5.3			1678
20 Feb	1415	1419	1421	B7.2			1678
20 Feb	1452	1456	1458	C3.0	SF	N11W47	1678
20 Feb	1751	1756	1800	B5.1			1676
20 Feb	1853	1857	1902	B8.1	SF	N13W53	1678
20 Feb	2150	2158	2212	C1.7			1678
21 Feb	0307	0310	0312	C1.9			1678
21 Feb	0401	0409	0416	C2.0			1678
21 Feb	0456	0505	0517	C2.5	SF	N09W57	1678
21 Feb	0854	0859	0910	B9.9			1678
21 Feb	1719	1719	1721		SF	N13W63	1678
22 Feb	0016	0028	0036	B5.6			1678
22 Feb	1214	1222	1233	C1.0			1678
22 Feb	1751	1755	1759	B8.3			1678
22 Feb	2053	2059	2109	B9.0			1678
23 Feb	0101	0104	0110	B6.9			1678
23 Feb	0717	0721	0723	B5.6	SF	N08W83	1678
23 Feb	0749	0804	0812	B8.0			1678
23 Feb	1556	1609	1620	C4.7			1678
23 Feb	1845	1856	1909	C2.9			1678
24 Feb	0607	0611	0618	B5.4			
24 Feb	0710	0719	0732	B8.1			1678

Flare List

	Time			Optical			
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
24 Feb	1317	1435	1457	C2.6			
24 Feb	2014	2020	2033	B9.8			1673

Region Summary

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
			Region 1671												
11 Feb	N14E58	76	150	2	Hsx	1	A								
12 Feb	N14E44	78	120	2	Hsx	1	A								
13 Feb	N14E31	79	100	2	Hsx	1	A								
14 Feb	N14E17	80	100	2	Hsx	1	A								
15 Feb	N14E04	77	90	2	Hsx	1	A								
16 Feb	N14W08	78	90	4	Cso	3	B								
17 Feb	N14W21	76	90	4	Hsx	1	A								
18 Feb	N14W35	77	110	3	Hsx	1	A								
19 Feb	N16W46	75	110	4	Cso	3	B								
20 Feb	N16W59	74	90	3	Hsx	2	A								
21 Feb	N15W73	74	70	2	Hsx	1	A								
22 Feb	N14W85	73	30	1	Hsx	1	A								
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 77

			Region 1672												
11 Feb	S18E39	95	10	3	Cro	5	B								
12 Feb	S18E25	98	10	1	Axx	1	A								
13 Feb	S18E12	99	plage												
14 Feb	S18W02	99	plage												
15 Feb	S17W15	96	10	1	Axx	1	A								
16 Feb	S17W29	97	10	1	Axx	1	A								
17 Feb	S17W43	98	plage												
18 Feb	S17W57	99	plage												
19 Feb	S17W71	100	plage												
20 Feb	S17W85	100	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 99

Region Summary - continued

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
			Region 1673												
15 Feb	S11E67	13	40	2	Hsx	1	A				1				
16 Feb	S10E56	12	100	5	Cso	11	B								
17 Feb	S10E43	12	70	7	Cao	5	B								
18 Feb	S09E31	11	60	8	Cao	8	BG				2				
19 Feb	S11E17	10	90	8	Dac	24	B								
20 Feb	S11E04	10	80	8	Cao	16	B								
21 Feb	S11W10	12	10	6	Bxo	10	B								
22 Feb	S10W23	11	10	7	Bxo	9	B								
23 Feb	S10W36	12	10	6	Bxo	9	B								
24 Feb	S10W48	13	plage												
								0	0	0	3	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 10

			Region 1674												
15 Feb	N14W03	84	10	2	Bxo	3	B								
16 Feb	N14W17	85	plage												
17 Feb	N14W31	86	plage												
18 Feb	N14W45	87	plage												
19 Feb	N14W59	88	plage												
20 Feb	N14W73	88	plage												
21 Feb	N14W87	89	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 84

			Region 1675												
16 Feb	N12E31	36	10	3	Bxo	9	B								
17 Feb	N12E18	37	50	6	Cso	13	BG	3	1		7				
18 Feb	N13E04	36	110	7	Cao	14	BG	1			1				
19 Feb	N12W09	37	60	9	Cso	3	B								
20 Feb	N12W23	38	50	3	Hsx	1	A								
21 Feb	N13W38	39	60	1	Hsx	1	A								
22 Feb	N12W52	40	70	1	Hsx	1	A								
23 Feb	N13W63	39	40	2	Hsx	1	A								
24 Feb	N12W76	38	40	6	Cso	2	B								
								4	1	0	8	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 36

Region Summary - continued

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
			Region 1676												
16 Feb	S18E78	350	30	2	Hax	1	A								
17 Feb	S18E64	350	30	2	Hsx	2	A								
18 Feb	S17E50	352	80	2	Hsx	2	A								
19 Feb	S19E37	352	50	1	Hsx	1	A								
20 Feb	S19E26	348	50	3	Cso	2	B								
21 Feb	S19E13	348	50	1	Hsx	2	A								
22 Feb	S19E01	347	40	1	Hsx	3	A								
23 Feb	S13W20	348	40	1	Hax	2	A								
24 Feb	S13W23	345	20	5	Dso	3	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 347

			Region 1677												
17 Feb	S27E65	350	10	2	Bxo	3	B								
18 Feb	S26E52	349	10	1	Axx	1	A								
19 Feb	S27E38	350	10	1	Axx	1	A								
20 Feb	S28E26	349	10	1	Axx	1	A								
21 Feb	S28E12	350	plage												
22 Feb	S28W02	351	plage												
23 Feb	S28W16	352	plage												
24 Feb	S28W30	353	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 351

			Region 1678												
18 Feb	N10W26	67	30	4	Dro	6	B								
19 Feb	N10W40	69	130	6	Dai	14	BGD	1			1				
20 Feb	N11W54	68	360	8	Dkc	13	BGD	3			3				
21 Feb	N11W67	69	470	10	Dkc	11	BGD	3			2				
22 Feb	N10W80	68	380	10	Dko	4	BG	1							
23 Feb	N08W93	69	350	8	Dko	4	BG	2			1				
								10	0	0	7	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 67

Region Summary - continued

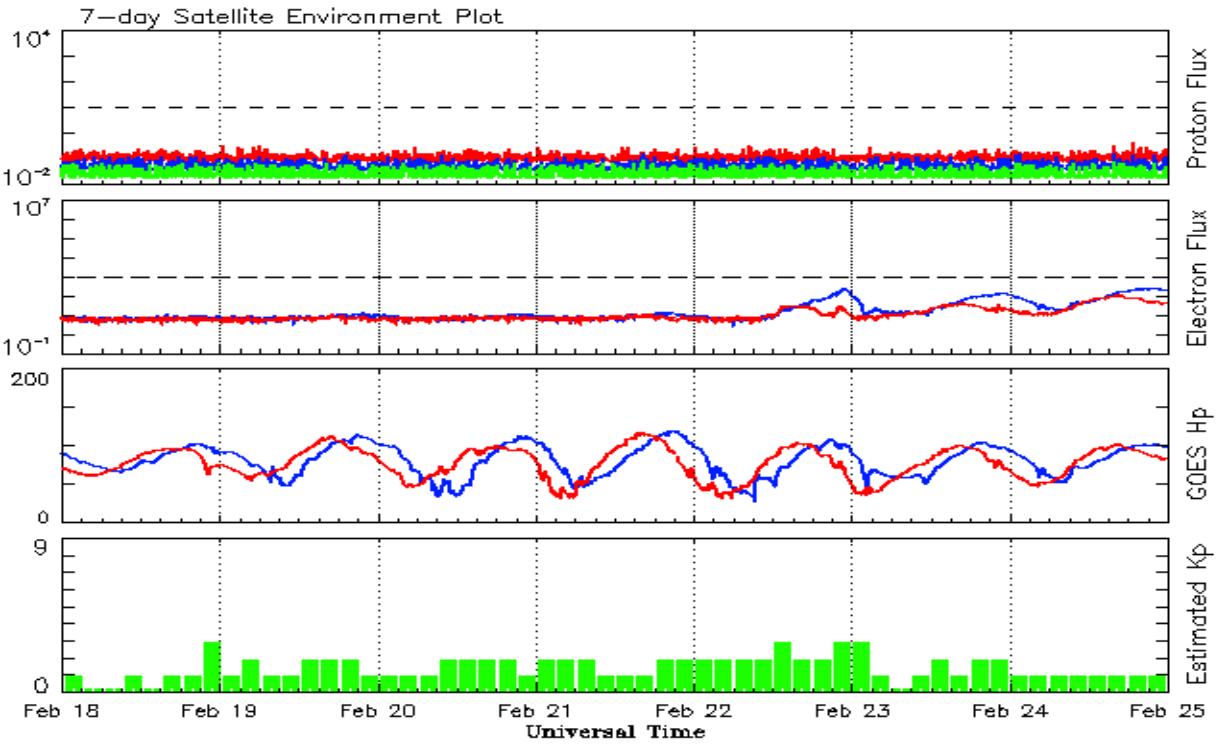
	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
		Region 1679													
19 Feb	S14E44	345	10		Axx	1	A								
20 Feb	S14E30	344	10	1	Axx	1	A								
21 Feb	S13E19	342	plage												
22 Feb	S10E08	341	0	1	Axx	1	A								
23 Feb	S10W06	342	plage												
24 Feb	S10W20	343	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 342

Recent Solar Indices (preliminary)
Observed monthly mean values

	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		Penticton	Smooth	Planetary	Smooth
Month	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
				2011					
February	53.2	29.6	0.55	50.6	33.4	94.5	92.7	6	6.8
March	81.0	55.8	0.69	55.2	36.9	115.3	95.8	7	7.2
April	81.7	54.4	0.67	61.5	41.8	112.6	100.4	9	7.5
May	61.4	41.6	0.68	69.0	47.6	95.9	105.6	9	7.5
June	55.5	37.0	0.67	76.5	53.2	95.8	110.9	8	7.4
July	67.0	43.8	0.66	82.5	57.3	94.2	115.4	9	7.3
August	66.1	50.6	0.77	84.9	59.0	101.7	117.9	8	7.4
September	106.4	78.0	0.73	84.6	59.5	134.5	118.4	13	7.7
October	116.8	88.0	0.75	84.6	59.9	137.2	118.4	7	8.0
November	133.1	96.7	0.73	86.3	61.1	153.1	119.5	3	8.0
December	106.3	73.0	0.69	89.2	63.4	141.2	121.6	3	8.0
				2012					
January	91.3	58.3	0.64	92.0	65.5	133.1	124.4	6	8.3
February	50.1	32.9	0.66	94.2	66.9	106.7	126.7	7	8.4
March	77.9	64.3	0.82	94.1	66.8	115.1	126.8	14	8.1
April	84.4	55.2	0.65	91.3	64.6	113.1	125.8	9	8.0
May	99.5	69.0	0.69	87.7	61.7	121.5	123.8	8	8.2
June	88.6	64.5	0.73	83.9	58.9	120.5	121.1	10	8.3
July	99.6	66.5	0.67	82.4	57.7	135.6	119.5	13	8.3
August	85.8	63.0	0.74			115.7		7	
September	84.0	61.4	0.73			123.2		8	
October	73.5	53.3	0.73			123.3		9	
November	89.2	61.4	0.69			120.9		6	
December	60.4	40.8	0.68			108.4		3	
				2013					
January	99.8	62.9	0.63			127.1		4	

Note: Values are final except for the most recent 6 months which are considered preliminary. Cycle 24 started in Dec 2008 with an RI=1.7.



Weekly Geosynchronous Satellite Environment Summary
Week Beginning 18 February 2013

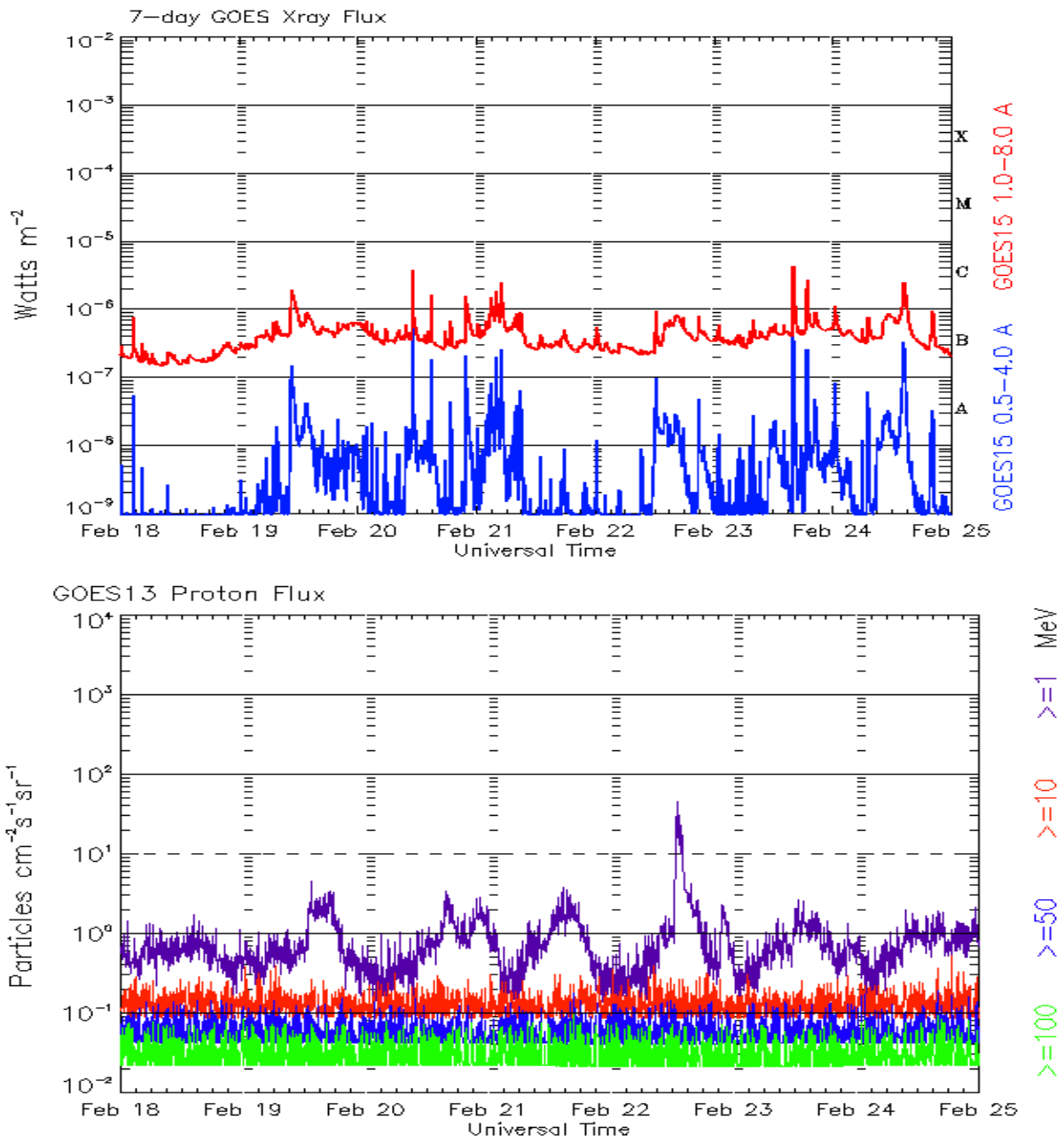
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm^2-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm^2-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

The Hp plot contains the five minute averaged Hp magnetic field component in nanoteslas (nT) as by the SWPC Primary GOES satellite. The Hp component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

The Estimated 3-hour Planetary Kp-index is derived at the NOAA Space Weather Prediction Center using data from the following ground-based magnetometers: Boulder, Colorado; Chambon la Foret, France; Fredericksburg, Virginia; Fresno, California; Hartland, UK; Newport, Washington; Sitka, Alaska. These data are made available thanks to the cooperative efforts between SWPC and data providers around the world, which currently includes the U.S. Geological Survey, the British Geological Survey, and the Institut de Physique du Globe de Paris.

The data included here are those now available in real time at the SWPC and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and Kp are 'global' parameters that are applicable to a first order approximation over large areas. H parallel is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.



Weekly GOES Satellite X-ray and Proton Plots
Week Beginning 18 February 2013

The x-ray plots contains five-minute averages x-ray flux (Watt/m^2) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

The proton plot contains the five-minute averaged intergral flux units (pfu = protons/cm^2 -sec -sr) as measured by the primary SWPC GOES Proton satellite for each of the energy thresholds: >1, >10, >30, and >100 MeV. The P10 event threshold is 10 pfu at greater than 10 MeV.

Preliminary Report and Forecast of Solar Geophysical Data (The Weekly)

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Notice: The 27-day Outlook, Satellite Environment, X-ray and Proton plots have been redesigned. Comments and suggestions are welcome SWPC.Webmaster@noaa.gov

The Weekly has been published continuously since 1951 and is available online since 1997.

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